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Remaining Resources of the Springfield Coal

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Introduction

Historically, the Springfield (W. Ky. No. 9) coal bed has been the leading source of coal production in the Western Kentucky Coal Field. With 2009 production more than 21 million tons and another 8 million tons of idle capacity, it is also the most important resource in the state of Kentucky. The Springfield coal is known for its lateral continuity in terms of both thickness and quality. It is a medium-sulfur product, desirable for power plants with sulfur-reduction capability, and has higher Btu values and lower chlorine contents compared to other Illinois Basin areas north of Kentucky. It is estimated to have the largest original and remaining resource in the Western Kentucky Coal Field (Greb and others, 1992). This map presents a revised interpretation of coal thickness since the last assessment (Andrews and others, 2000), uses newly acquired data, and presents updated mining information.

Map Compilation

The outcrop area of the Springfield coal bed was digitized from 1:125,000-scale Mylar compilations that were generalized from U.S. Geological Survey 1:24,000-scale geologic quadrangle maps. Data for coal-thickness interpolation were compiled from the coal borehole database at the Kentucky Geological Survey. Some of the boreholes were drilled during KGS projects, but most data were submitted to KGS by coal companies and other government agencies. The data were entered into the database, and coal beds were manually correlated and tagged. Seam height, parting thickness, and elevation from 2,546 boreholes were extracted from the database for manual isopleth interpolation. Mine outlines were derived from multiple sources. The first source is digitized polygons compiled by the Kentucky Revenue Cabinet from mine maps submitted to the Office of Mine Safety and Licensing (www.minemaps.ky.gov). Some older mine information, especially for surface mines, came from a previous version of this publication that included a better representation of historical mining (Andrews and others, 2000).

Coal Thickness

Across most of its extent in western Kentucky, the Springfield coal is greater than 42 in. thick, and in the southwestern half of the coal field is greater than 56 in. Most of the variation in thickness can be attributed to gradual tapering of the coal bed in a northeast direction or to abrupt erosional truncation by sandstone channels. No major splits in the Springfield coal have been documented in western Kentucky, although some splitting may occur in the vicinity of sandstone paleochannels. Some thin coal areas are also associated with faulting.

Mining

The Springfield coal bed has been mined since at least 1820, and it is still the source of the majority of coal production from the Western Kentucky Coal Field. Early mines were near the navigable waterways, and relied on river transportation to distribute the coal. Most historical mines in the Springfield were underground operations until the extensive development of surface mines in the 1950's and 1960's, when large areas along the southern margin of the coal field were surface-mined. A majority of the coal produced since the 1980's has been mined by underground methods, because most of the surface-mineable coal has been extracted. There are currently 14 active producing mines for the Springfield in western Kentucky (Table 1). Some of these underground mines also produce from the Herrin coal (W. Ky. No. 11) because faulting has brought the beds into juxtaposition along adjacent fault blocks. Currently, a depth of approximately 1,000 ft is the practical limit to mining because of roof- and floor-control issues related to overburden. The 1,000-ft depth limit is shown on the map.

Coal Resources

Original and remaining resources by thickness category are shown in Table 2. Of the original 10 billion short tons of resources, nearly 75 percent remains (7.5 billion short tons). These resources are about equally divided between coal greater than 56 in. thick and less than 56 in. Approximately 800 million tons lies at depths greater than 1,000 ft and may not be available for economic development. Original resources for this study are 3 percent greater than those reported in Weisenfluh and others (2001), reflecting differences in the modeling of thickness contours.

Location map

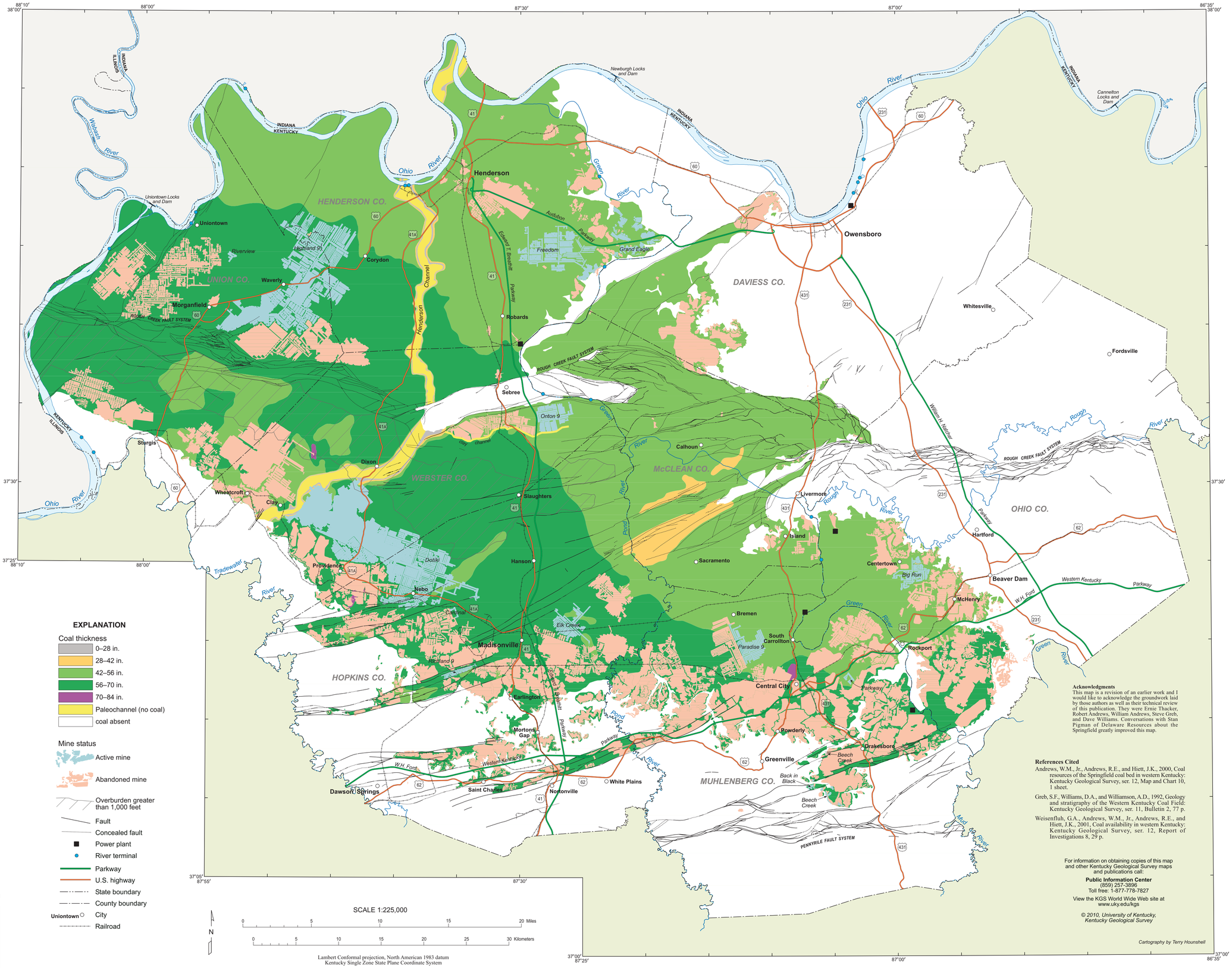
Table 1. Active mines within the Springfield coal in western Kentucky. SFN is the State identifier for the mine permit.

County	Mine	SFN	Type	Operator	2009 Production (short tons)
Union	River View	18812	Underground	River View Coal	284,596
Union	Highland 9	05877-8	Underground	Highland Mining	3,676,615
Henderson	Freedom	18217	Underground	Ohio County Coal	1,953,049
Henderson	Grand Eagle	17237-1	Underground	Grand Eagle Mining	1,200,627
Webster	Onton 9	18626	Underground	Advent Mining	2,912,719
Hopkins	Dotiki	08987	Underground	Webster County Coal	4,200,121
Hopkins	Cardinal	18144	Underground	Warrior Coal	5,110,755[1]
Hopkins	Richland 9	18111-1	Underground	Pleasant View Mining	366,970
Hopkins	Elk Creek	18651	Underground	Hopkins County Coal	5,441,605
Muhlenberg	Paradise 9	18247-1	Underground	Kenamerican Resources	2,973,664[2]
Muhlenberg	Parkway	18806	Underground	Armstrong Coal	759,818
Muhlenberg	Beech Creek	18152-2	Surface	C & R Coal	134,094
Muhlenberg	Back in Black	18430-1	Surface	Oxford Mining	127,637[3]
Ohio	Big Run	18509	Underground	Armstrong Coal	588,502

[1] 2008 production. Currently producing from No. 11 seam.
[2] 2007 production. Currently producing from No. 11 seam.
[3] 2008 production. Currently producing from No. 11 seam.

Table 2. Original and remaining resources of the Springfield coal in western Kentucky. Data are in million short tons.

Thickness	Original	Mined-Out	Remaining (2009)
0–28 in.	8	0	8
28–42 in.	79	3	76
42–56 in.	4,264	652	3,612
56–70 in.	5,860	2,040	3,821
70–84 in.	16	8	8
Total	10,228	2,703	7,525



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